INTRODUCTION TO THE MARS PATHFINDER ISSUE

Mars Pathfinder successfully landed on the surface of Mars on July 4, 1997, ushering in a renewed phase of exploration of our neighboring world after a hiatus of over 20 years. In addition to successfully capturing the imagination of the public by landing a robust, low-cost spacecraft and rover on the Red Planet, Pathfinder returned a significant volume of scientific data. Pathfinder was the first Mars mission to use a rover, which carried a chemical analysis instrument that characterized the rocks and soils in a landing area occupying hundreds of square meters. In 3 months of surface operations at Ares Vallis, Pathfinder's three science instruments, ten technology experiments, and engineering subsystems aboard the rover and lander, addressed seven general areas of scientific investigations. These investigations include the geology and geomorphology of the surface, mineralogy and geochemistry of rocks and soils, physical properties of surface materials, magnetic properties of airborne dust, atmospheric science, including aerosols, and rotational and orbital dynamics of Mars. The papers in this issue are the first detailed treatment in the literature of Pathfinder science results from the entire mission. Although they are dominantly by members of the Pathfinder science team, participation was open to the entire science community.

planetary geology

Those of us who worked on the Mars Pathfinder mission acknowledge the central role played by Henry J. Moore. His position as Rover Scientist during development and operations helped ensure that the rover returned scientifically useful information and served as an effective deployment device for the chemical analysis instrument. He also became heavily involved in the selection of the landing site for Pathfinder, in which he carefully estimated surface properties and weighed them against the engineering constraints developed for the lander and rover. His intellectual leadership in this area significantly improved the landing site selection activity. Results presented in this issue show that remote sensing data at scales of kilometers accurately predicted the characteristics of the Mars Pathfinder landing site at a scale of meters. During operations, Hank headed the Surface Materials Properties Science Operations Group and provided operations input to the rover team and the project. His efforts resulted in the acquisition of significant new information on the physical and mechanical properties of surface materials on Mars and their remote sensing signatures (also presented in this issue).

Hank was uniquely suited to working on the Pathfinder project following the Apollo and the Viking missions in which he helped select landing sites and estimated surface material properties. All of us who worked on Pathfinder were fortunate to have been a part of such a small, close-knit team that had so much fun on this successful and publicly engaging mission, and Hank enjoyed the experience as much as anyone. His tireless advocacy of the rover contributions to the mission and his curmudgeonly adherence to rigor and detail in addressing the Pathfinder landing site were major contributions to the mission that we all benefited from. Judging from Hank's hard work and commitment on this mission, he clearly would have wanted future missions to Mars to carry on the tradition begun by Pathfinder.

Matthew Golombek
Mars Pathfinder Project Scientist

Photo Caption

Henry J. Moore at Dry Falls during the Mars Pathfinder landing site workshop and field trips to the Channeled Scabland, Washington in September 1995.